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The changing politics of agronomy research

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Abstract

The context within which agronomy research takes place has changed fundamentally over the last forty years, with important implications for the discipline. Systematic study of the new politics of agronomy is particularly important in an era when the whole basis of global and sustainable food security is under question. One critical challenge is to analyse the forces driving claims to universality of technology and approaches.

Introduction

Contestation, struggle and politics characterise most academic fields. Within agronomy however, at least until recently, they have been conspicuous largely by their absence. Agronomy and agronomists are all about the application of plant and soil science to improve crop production. We are practical problem solvers. Who said anything about politics?

One of the great intellectual insights from the latter half of the 20th century was that the touchstones of scientific research, including 'facts', 'evidence' and 'knowledge', are much more slippery and problematic than previously assumed. The phrase 'the politics of knowledge' captures the idea that the creation and use of knowledge and technology – which are of course at the heart of agronomy – are embedded in complex political, economic and social worlds that are characterised by asymmetric power relations. In agronomy and agricultural research more broadly power is (and has long been) exercised in the framing of problems and the setting of priorities, through funding decisions, through 'partnerships', through crop variety release procedures and through the peer review and publication process.

Over the last decade the contestation, struggle and politics that inevitable accompany asymmetric power have become increasingly evident in and around the field of agronomy. To illustrate one has to look no further than the Green Revolution in Asia in the 1970s and 1980s, to which plant breeding and agronomic research made very significant contributions. However, the protracted debates about the rights and wrongs, benefits and costs of the Green Revolution primarily involved social scientists and economists, not agronomists or plant breeders, and had little profile in mainstream agronomy

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journals. In contrast, recent highly charged debates about GM varieties, Conservation Agriculture (CA) and the System of Rice Intensification (SRI) are being pursued by technical scientists publishing in the most respected agronomy journals. How can we explain this change?

We have previously argued that while the creation and use of agronomic knowledge and technology have always been political, for much of the 20th century agronomy functioned as a technical discipline dominated by the state, which set policy priorities, funded research and promoted the uptake of resulting technologies (Sumberg and Thompson 2012; Sumberg, Thompson, et al. 2012). There was a strong unity of purpose, with the modernisation of agriculture at its core, between the state, the discipline of agronomy and farming communities. This unity of purpose, and the practical, problem-solving orientation of agronomy, meant that as a discipline it experienced little of the heated debate and existential crises that shook some other academic fields to their core.

However, beginning in the mid-1970s this relatively stable context for agronomy and agronomists began to change. Specifically, over the course of the following three decades there were significant changes in society (changing ideology, and particularly neoliberalism; new roles; new actors; new opportunities and spaces for social action); agriculture and the associated food economy (increasing scale; global consolidation; new systems of regulation); and agricultural science (new foci; new tools; change in where research is done, who does it and who funds it).

Political agronomy

The rise of the neoliberal agenda and emergence of the environmental and participation movements in the 1970s had dramatic effects on agronomy. A faith in the role of 'free markets' and a desire to 'shrink the state', combined with new intellectual property regimes and emergent bio-technologies, opened the way for a much expanded role for private capital in agricultural research, technology development and promotion. At about the same time, in some quarters there was increasing concern about the environmental impacts of modern farming practices; while in others, the notion gained ground that in the developing world poor farmers were not benefiting from – or were even being harmed by – new agricultural technology, leading to calls for more 'participatory' and empowering approaches to research. Taken together these changes represented a fundamental shift in the context within which agronomic research was prioritised, funded, managed, implemented and evaluated. An unintended consequence of this restructuring of agronomic research has been the opening up of new opportunities and spaces for contestation both within the discipline, and about the knowledge and technology it produces. Active and wide-ranging intra-disciplinary and inter-disciplinary debate, and public contestation and activism around agricultural technology, have coincided with renewed concern about the ability of agriculture to deliver both global food security and natural resource sustainability.

These changes and their effects have been evident to varying degrees in different settings, being more pronounced where agriculture is on a purely commercial basis and where purchased inputs, and the companies that develop and supply them, play a central role. Nevertheless, we argue that they have affected agronomic research to a greater or lesser extent in both developed and developing countries, whether it is public or privately funded, and whether it takes place within national, regional or international frameworks.

Because of the importance of agronomy and agronomic research in supporting productive and sustainable agricultural systems, systematic analysis of the changing context and its effects on agronomy – what we have referred to as political agronomy studies – should now be given high priority. Political agronomy is more relevant now than ever.

Such studies should build on previous work around the political economy of agricultural research in specific national contexts, and in relation to specific crops, technologies and global research initiatives such as the centres of the Consultative Group on International Agricultural Research (CGIAR). But beyond this, political agronomy should highlight both the rapidly changing social, economic and technological contexts within which agronomic research takes place, and the fact that these changing contexts have significantly reduced the state's ability to use traditional policy instruments to affect the direction and rate of technical change within agriculture. From a political agronomy perspective, the questions of interest relate to the drivers of processes of framing and reframing; the actors and relationships involved; and the impacts of different framings and narratives on the conception, practice and presentation of agronomic research and what it aims to deliver.

Incremental or transformative innovation

Political agronomy analysis necessarily focuses on and revolves around efforts to generate and promote the use of new agronomic knowledge and technology. These efforts fall into two groups. The first, encompassing perhaps the bulk of 'everyday agronomic research', includes the countless examples of incremental innovation, each meant to address a specific 'technical' problem within a given production system or context, or to provide the user (farmer or producer) with some marginal advantage. New crop varieties, new pest control products or strategies and new fertiliser application rates or methods might typify this kind of incremental innovation. In the second group we have examples of the generation and promotion of agronomic knowledge and technology that are more radical and potentially transformative. Here the direction of agronomic research is set by an objective of transforming the social, political, economic, technical and/or commercial orders, and is underpinned by both an analysis of 'problems' or 'constraints' and a vision of a desirable future which might encompass, for example, either a continuation of existing trends towards increasingly mechanised farming or a radical break towards smaller-scale 'post-industrial' agriculture (Woodhouse 2010). Examples in this transformational group include the agronomic research that facilitated the

mechanisation of the California horticulture industry; the Green Revolution approach to the modernisation of small-holder farming; the organic and agro-ecological farming movements; and the Sasakawa Global 2000 programme in Africa (Sumberg, Keeney, et al. 2012).

Contestation around examples in the first group tends to be limited, focused on technical performance, benefit-cost etc, and has limited public profile. In the second group the potential for contestation is greater, including around the analysis of the problem, its causes and associated outcomes; the vision of the future agrarian society they are seeking to create, and including expectations of who wins and who loses from the proposed change; the technical performance of the new technology or system; and issues associated with all the other policies, measures and institutions needed to support it. Contestation and public activism may coalesce around a number of social, political, economic and environmental concerns, many of which are outside the traditional disciplinary bounds of agronomy.

Both incremental and transformative innovation may be associated with unforeseen and unintended consequences, and both the possibility and reality of these may change the focus, nature and/or intensity of contestation. This highlights the interplay of different understandings of and approaches to risk, uncertainty and ambiguity in the politics around agricultural technology and the associated dynamics of contestation. Debates and activism around the potential effects of GM crop varieties on human health and weed populations illustrate how these different understandings can be used tactically to affect both the public mood and regulatory outcomes. Another widely used tactic in contestation around agricultural technology involves framing and re-framing. For example, a technology such as GM crop varieties can be framed as an incremental innovation (simply the latest in a long line of improved varieties) or as 'technology for the poor' (Glover 2010); or it can be re-framed as a transformative technology in either a positive (allowing significant reductions in pesticide application or improved nutrient content through 'biofortification') or negative (facilitating even greater concentration of corporate control over key agricultural and biological resources) sense. Similarly, an apparently innocuous incremental innovation can be re-framed as a short-sighted 'technical fix' because it neither acknowledges nor addresses what the re-framer considers the underlying structural issue; while potentially transformative innovations such as organic agriculture are re-framed as idealistic and impractical.

The politics of success

Closely related to the question of framing is another important dimension of the new politics of agronomic research and technology in the developing world – the heightened imperative to demonstrate impact and 'value for money'. This imperative operates at many levels, from the individual research agronomist, programme and institute, through to the research funding agencies (public, charitable or private), development ministries and so on. In addition, agricultural development actors, from local community groups and district-level extension services through to

international NGOs and UN agencies, are under increasing pressure to justify their continued funding by demonstrating the success of their actions. The multiple and overlapping levels at which agronomists work, from experimental plots and farmer's field to production systems and landscape, provide fertile ground for this element of the new politics of agronomic research. The stakes can be quickly raised – from 'promising results' to the promise (or claim) of 'impact at scale' – during which situated agronomic knowledge and technology become progressively 'silvered' into the next universal technology bullet. The internet and other media that are less constrained by the ethos of peer-review are critical to the dynamic of 'success making', the act of proclaiming a particular project, programme, innovation, technology, policy or organisation a success in a way that may shelter the claim from normal scrutiny and critical evaluation (Sumberg, Irving, et al. 2012). The CA, GM crop variety and SRI controversies illustrate this dynamic.

Centuries of agronomic knowledge accumulated through both practice and formal research refute any suggestion that there can be universally applicable solutions to the problems of sustainable agricultural production. The challenge for political agronomy studies – and for all those involved in agronomic research or concerned about its future – is to analyse the forces that are driving claims to universality, the actors and coalitions that are making and contesting these claims, and the implications for agricultural producers, consumers, the environment and the discipline of agronomy itself.

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